

TWO NEW SPECIES OF THE GENUS *IDUNELLA*
SARS, 1895 (CRUSTACEA: AMPHIPODA) WITH
REMARKS ON THE OTHER SPECIES
(Contribution to the Knowledge of the Amphipoda 94)

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Abstract.—*Idunella bowenae* n.sp. is described from the Atlantic coast of the United States, off Maryland. This species is strongly allied to *I. janisae* Imbach 1967. A new species, *Idunella nagatai* Karaman is proposed for the specimens of *Idunella* from the Inland Seto Sea (Japan) identified by Nagata as *Idunella chilensis* Chilton. A key to the species of *Idunella* is presented.

The genus *Idunella* was described by Sars (1895) from the North Atlantic Ocean with the type-species by monotypy, *Liljeborgia aequicornis* Sars (1876). Chevreux (1920) described a new genus and species, *Sextonia longirostris*, which was removed later to the genus *Idunella* by J. L. Barnard (1959).

Six other species were described later: *Idunella chilensis* Chilton, 1921; *Idunella curvidactyla* Nagata, 1965; *I. janisae* Imbach, 1967; *I. pauli* Imbach, 1967; *I. serra* Imbach, 1967; and *I. pirata* Krapp-Schickel, 1975.

My thanks go to the biologist, Marcia Bowen, Virginia Institute of Marine Science, who made it possible to study three samples of *Idunella* from the eastern Atlantic coast of the United States (off northern Maryland). The specimens belong to a new species, described below. These specimens were collected as a part of a study for the Bureau of Land Management on the macrobenthos of the outer continental shelf of the Middle Atlantic Bight.

Idunella bowenae, new species
Figs. 1-3

Diagnosis.—Metasome segment 2 with 3 dorsomarginal teeth, urosomites 1-2 each with one long dorsomedian tooth.

Description.—Female: Length up to 7 mm (ovigerous female). Body laterally compressed, mesosome and metasome segments smooth except metasome segment 2 with 3 dorsomedian marginal teeth (Fig. 3C). Urosomites 1-2 with one long dorsomedian tooth each (Fig. 3A, B, C), urosomite 3 smooth, with 2 dorsal spines (Fig. 3C). Rostrum short, lateral cephalic lobes subrounded (Fig. 1C), eyes large, ventroanterior sinus of head poorly developed, but present (Fig. 1C).

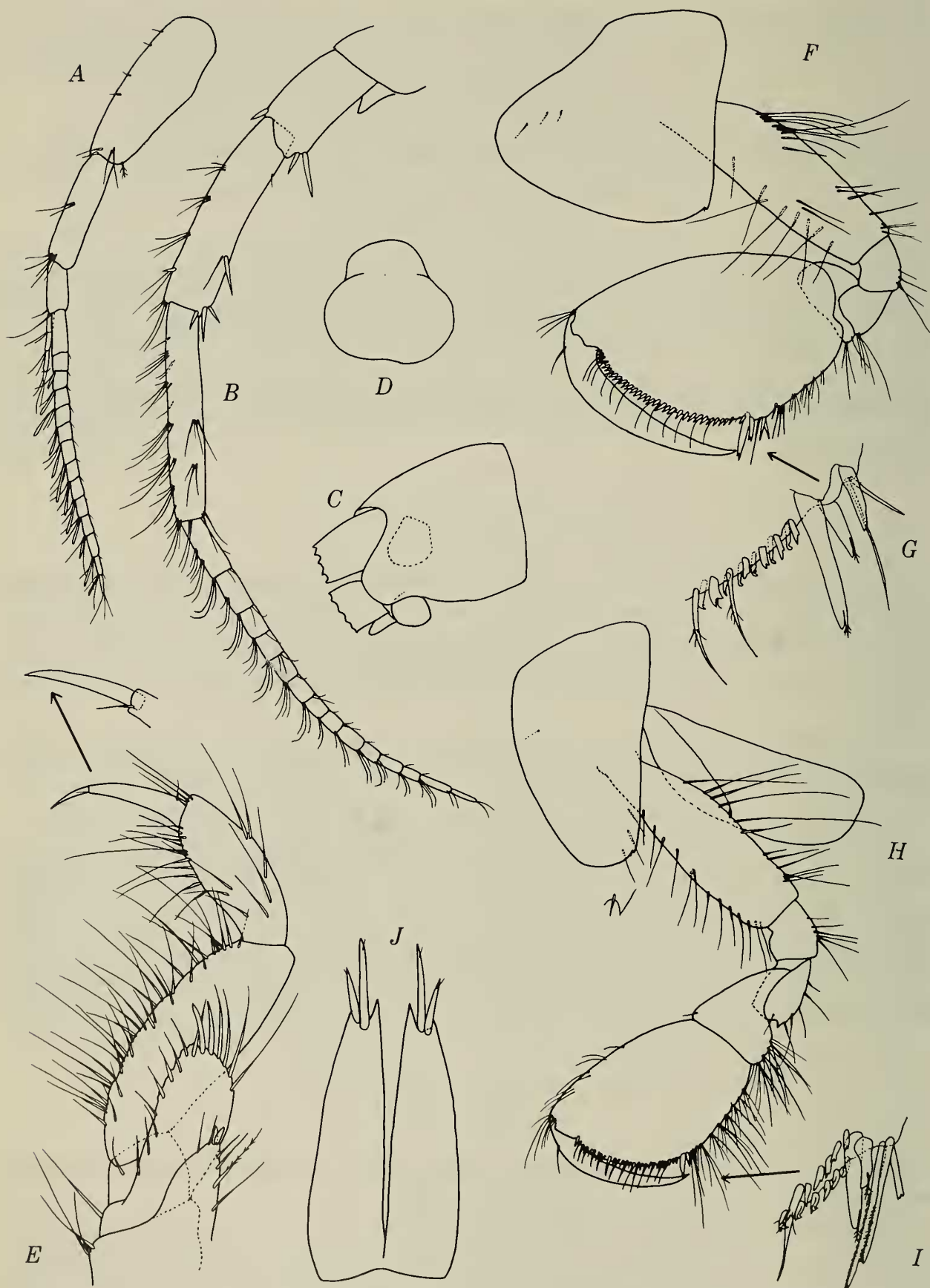


Fig. 1. *Idunella bowenae*. FEMALE 7 mm (holotype). A, Antenna 1; B, Antenna 2; C, Head; D, Labrum; E, Maxilliped; F-G, Gnathopod 1; H-I, Gnathopod 2; J, Telson.

Antenna 1 and antenna 2 shorter than body; antenna 1 shorter than antenna 2, reaching only apex of peduncle of antenna 2; peduncle articles 1–3 of antenna 1 progressively shorter; main flagellum slightly shorter than peduncle, consisting of 14 articles provided with setae and one aesthetasc each; accessory flagellum consisting of 4 articles (Fig. 1A).

Antenna 2 peduncle article 3 longer than $\frac{1}{2}$ peduncle article 4, bearing 1–2 distal spines on ventral and dorsal margins; flagellum slightly shorter than peduncle, consisting of 14 articles provided with clusters of setae along dorsal margin. Antennal gland cone shorter than peduncle article 3 (Fig. 1B).

Mandible with incisor toothed, molar feeble, non-tritulative (Fig. 3G); palp strong, 3-articulate, article 1 longer than $\frac{1}{2}$ article 2, shorter than article 3, provided with 3 distal setae; article 2 with several lateral and distal setae; article 3 long, slightly shorter than article 2, falciform, bearing ca. 20 marginal D-setae and 3–4 long distal E-setae (Fig. 3H).

Labrum broader than long, concave distally (Fig. 1D). Labium short and broad, with well developed outer lobes, inner lobes absent (Fig. 3E). Maxilla 1: inner plate short, provided with 2 long plumose setae and 2 shorter simple setae; outer plate with 7 spines bearing several lateral teeth each; palp 2-articulate, second article longer than first, provided with several laterodistal spines and with several dorsal setae (Fig. 3F). Maxilla 2 with short plates; inner plate shorter and broader than outer, provided with several marginal and submarginal plumose setae as well as with several simple setae (Fig. 2F); outer plate with numerous simple setae.

Maxilliped with relatively small plates; inner plate not exceeding distal margin of palp article 1, conical, provided with 2 short distal spines and with several lateral setae; outer plate reaching midlength of palp article 2, provided with lateral setae and distal spines; palp strong, article 2 longest, provided with numerous setae along inferior margin (Fig. 1E); palp article 3 with setae along both margins; article 4 slightly shorter than article 3, recurved, narrow, with distal nail.

Coxae 1–4 moderately long, with small notch at ventroposterior margin; coxa 4 with several notches at posterior margin (Figs. 1F, H; 2A, B). Coxa 1 dilated distally (Fig. 1F), coxae 2–3 tapering distally (Figs. 1H, 2A); coxa 4 quadrate, with well developed distoposterior lobe (Fig. 2B). Coxae 5–7 short, progressively shorter towards coxa 7 (Fig. 2C, D, E).

Gnathopods 1 and 2 subchelate, large. Gnathopod 1 much larger than gnathopod 2, article 2 with setae along both margins; articles 3–5 short; article 6 (propodus) subovoid, with palm entire, convex, occupying about $\frac{1}{2}$ of posterior margin, bearing a row of numerous short spines along both inner and outer margins as well as a row of longer plumose setae along margin on inner surface (Fig. 1F, G); spines are straight or recurved; distoposterior corner of propodus bearing 2 spines on outer face and 1 sub-

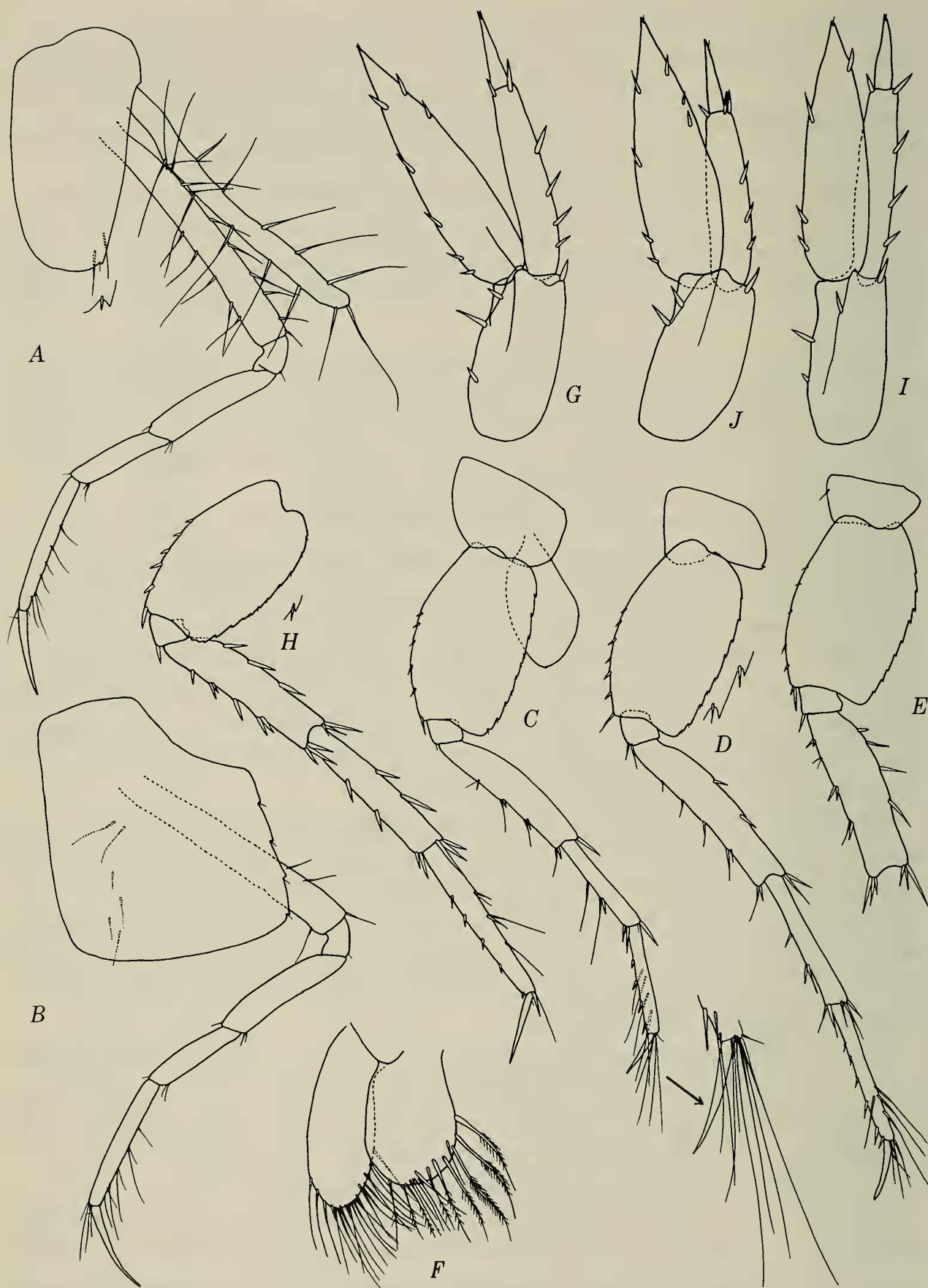


Fig. 2. *Idunella bowenae*. FEMALE 7 mm (holotype): A, Pereopod 3; B, Pereopod 4; C, Pereopod 5; D, Pereopod 6; E, Pereopod 7; F, Maxilla 2. G, Uropod 3. FEMALE 6 mm: H, Pereopod 7; I, Uropod 3. MALE 5 mm: J, Uropod 3.

corner spine on inner face (Fig. 1G); posterior margin of propodus provided with several clusters of shorter setae; dactyl long and slender, smooth on both margins, provided with 1 short seta on outer margin.

Gnathopod 2 (Fig. 1H, I): article 2 with setae along both margins; articles 3–4 short, article 4 with distoposterior tooth; article 5 triangular, short, with clusters of setae on posterior margin; propodus (article 6) large, longer than broad; palm convex, entire, occupying about $\frac{1}{2}$ of posterior margin of propodus, bearing spines and setae like those on gnathopod 1; one corner and 1 subcorner spine present at distoposterior corner of propodus; dactyl like that of gnathopod 1.

Pereopods 3–4 slender, long, similar to each other (Fig. 2A–B); article 2 longest, article 3 short, article 4 slightly longer than article 5; article 6 slightly longer than article 5 and article 4, provided with longer setae along posterior margin; dactyl slender, long, exceeding $\frac{1}{2}$ length of article 6.

Pereopods 5–7 slender, long, pereopod 5 slightly shorter than pereopods 6–7; article 2 of pereopods 5–7 ovoid, with serrate posterior margin and with well developed distoposterior lobe; articles 3–6 slender, article 5 shorter than article 4; dactyl slender, shorter than $\frac{1}{2}$ article 6; article 6 with several long setae along posterior margin (Fig. 2C, D, E).

Pleopods with 2 retinacula each. Epimeral plates 1–3 smooth (Fig. 3D, J), plates 1–2 with moderately pointed distoposterior corner, epimeral plate 3 with bisinuate posterior margin and more strongly pointed distoposterior corner.

Uropods 1–2 well developed (Fig. 3A). Uropod 1 with peduncle longer than rami, provided with a row of numerous short spines along dorsal margin and with 1 distal long spine; rami subequal in length, provided with several lateral and 1 distal spine.

Uropod 2 peduncle nearly as long as rami, without dorsal row of spines; rami subequal, with several lateral and distal spines. Uropod 2 not reaching apex of uropod 1.

Uropod 3 much exceeding apex of uropod 1; peduncle shorter than rami; rami lanceolate, subequal in length, provided with 1 short subdistal seta; inner ramus larger than outer, uniarticulate, (Fig. 2G, I, J); outer ramus narrow, 2-articulate, second article shorter than $\frac{1}{2}$ first; margins of rami sparsely spinose.

Telson slightly exceeding apex of peduncle of uropod 3, narrow and long (Fig. 1J), incised almost to base; each lobe bifurcate distally, bearing 2 distal spines shorter than $\frac{1}{2}$ of lobe-length, each spine with a short subapical seta.

Gills normal, ovoid. Oostegites narrow, occurring on pereonites 2–5 (Fig. 2A).

Males.—No distinct sexual dimorphism was observed, the single male closely resembles the females.

Material examined.—Northeastern Atlantic coast of United States:—K5-

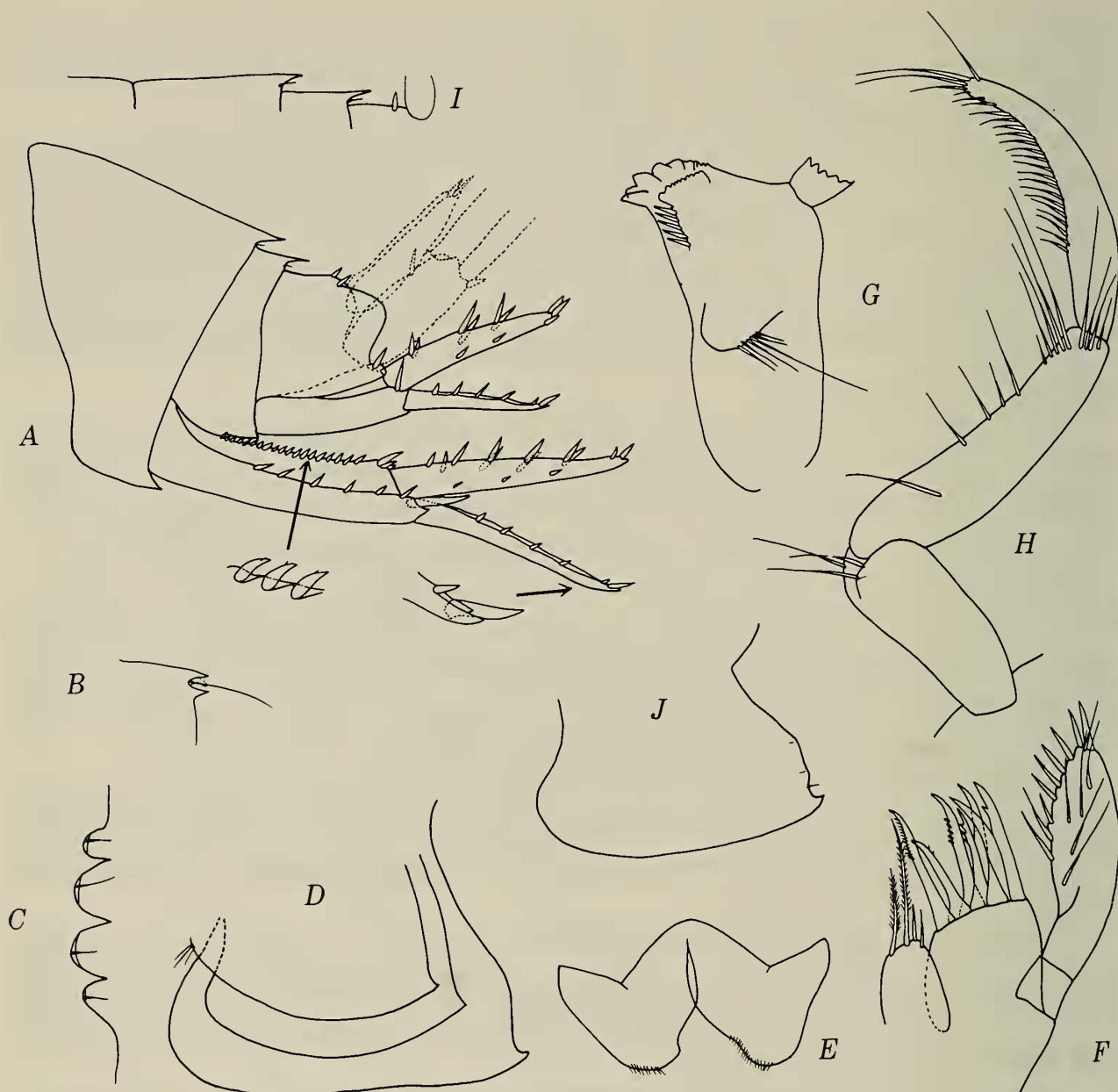


Fig. 3. *Idunella bowenae*. FEMALE 7 mm (holotype): A, Urosome with uropods 1-2; B, Metasome segment 2, lateral; C, Metasome segment 2, dorsal; D, Epimeral plates 1-3; E, Labium; F, Maxilla 1; G-H, Mandible. MALE 5 mm: I, Urosome, lateral; J, Epimeral plate 3.

8 06 B (off Northern Maryland), depth 151 m, one ovig. female, 7 mm, holotype (USNM 171355).—A2 (7-12-0 8B) (39°22'N, 72°31'W); depth 128 m, 2 paratypes (USNM 171399).—A3 (7-12-0 8R) (39°16.5'N, 72°30'W); depth 136 m, 2 paratypes (USNM 171400). One paratype is deposited in Karaman's collection in Titograd (Yugoslavia).

Type-locality.—off Northern Maryland.

Etymology.—The specific name *bowenae* is the genitive patronym honoring the biologist Marcia Bowen from the Virginia Institute of Marine Science who collected these specimens.

Variability.—The inner ramus of uropod 3 is as long as or slightly longer than the outer ramus. The eyes are poorly visible in alcohol preserved spec-

imens. Even small specimens of 3 mm have well developed, long dorsal teeth on urosomites 1–2.

Remarks and affinities.—*Idunella bowenae* n.sp. is allied to *Idunella janisae* Imbach, 1967, known from the South China Sea, because of the shape of uropod 3, toothed epimeral plates, uropods 1–2, etc., but differs from *I. janisae* in the following characters: (1) Mandible palp article 3 is almost as long as article 2 and very falciform (poorly falciform in *I. janisae*); (2) the presence of 4 setae on inner lobe of maxilla 1 (2 setae in *I. janisae*); (3) the more spiniferous maxilla 1 palp; (4) the longer dorsal teeth on urosomites 1–2; (5) the lesser number of dorsomarginal teeth on metasome segment 2; (6) the longer dactyl of pereopods 3–4, exceeding $\frac{1}{2}$ of article 6 -length ($\frac{1}{2}$ of article 6 in *I. janisae*); (7) the larger coxa 4 (narrow in *I. janisae*); (8) the longer nail of maxilliped palp article 4, reaching $\frac{1}{3}$ of palp article 4 ($\frac{1}{4}$ in *I. janisae*).

Idunella nagatai, new species

Idunella chilensis Nagata 1965:166–167 (nec Chilton, 1921).

Nagata (1965:166) mentioning new localities for *Idunella chilensis* Chilton, 1921, from the Seto Inland Sea (Japan), recorded that his specimens differed from the figures and description of Chilton (1921) of *I. chilensis* by the distinct antennae 1–2. Nagata's specimens differ from Chilton's specimens (recording the literature only), by several points: antenna 1 in females is a little shorter than antenna 2; in males antenna 1 is about half as long as antenna 2 (Chilton's specimens have antenna 1 in males much longer than antenna 2, in females nearly as long as antenna 2); peduncle article 1 of antenna 1 in both sexes is a little longer than peduncle article 2 (in Chilton's specimens peduncle article 1 as long as peduncle article 2 in males, or peduncle article 1 shorter than peduncle article 2 in females); the main flagellum of antenna 1 in both sexes is shorter than the peduncle (in Chilton's specimens the main flagellum of antenna 1 in males is much longer than the peduncle, but in females is shorter than the peduncle); the telson is 2.5 times longer than broad (in Chilton's species it is less than 1.5 times longer than broad).

Idunella chilensis Chilton is the only species of *Idunella* in which male antenna 1 is so much longer than that of females. In all other known species antenna 1 in males and females is as long as antenna 2 or shorter than antenna 2.

Unless Chilton made some mistake by mixing two different species together, *I. chilensis* differs very strongly from all other species by this character.

If the description and figures of Chilton are correct, Nagata's specimens from Japan represent a distinct new species, *Idunella nagatai*, differing

from *I. chilensis*, in the shape of the antennae and telson, as mentioned above.

Syntypes.—Nagata's specimens from area XI-a (eastern area of Suo Nada, depth 30–60 m, 3 specimens).

Distribution.—Seto Inland Sea (Japan).

Etymology.—The specific name *nagatai* honors the biologist Kizo Nagata from Japan who first mentioned this species from Japan.

Diagnosis.—Like *I. chilensis*, but differing from it by the different shape of antennae 1–2 and by narrow telson.

Key to the Species of *Idunella*

1. Metasome segments smooth 2
- Metasome segments serrate or toothed 3
2. Rostrum long, reaching $\frac{2}{3}$ of first peduncle segment of antenna 1.
Urosomites 1–2 with 3 dorsal teeth each *I. longirostris*
- Rostrum short, reaching less than $\frac{1}{3}$ of first peduncle segment of antenna 1. Urosomites 1–2 smooth *I. pauli*
3. Metasome segment 2 with 1 dorsomedian tooth (metasome segments 1 and 3 smooth) 4
- Metasome segment 2 with serrate posterior margin 5
4. Dactyl of pereopods 5–7 exceeding $\frac{1}{2}$ length of corresponding article 6. Inner plate of maxilla 1 with 2 setae. Palm of gnathopod 1 in male convex *I. pirata*
- Dactyl of pereopods 5–7 not reaching $\frac{1}{2}$ length of corresponding article 6. Inner plate of maxilla 1 with 1 seta. Palm of gnathopod 1 in male deeply concave *I. aequicornis*
5. Uropod 3 with nearly subequal long rami 6
- Uropod 3 with outer ramus not exceeding $\frac{2}{3}$ length of inner ramus .. 7
6. Mandible palp article 1 distinctly shorter than palp article 3. Inner plate of maxilla 1 with 4 setae. Dorsal tooth of urosome segments 1–2 long. Coxa 4 broad *I. bowenae*
- Mandible palp article 1 as long as article 3. Inner plate of maxilla 1 with 2 setae. Dorsal tooth on urosome segments 1–2 short. Coxa 4 narrow *I. janisae*
7. Palm of gnathopod 1 in males convex, entire 8
- Palm of gnathopod 1 in males with teeth or excavations 9
8. Metasome segments 2–3 and urosomite 1 minutely serrate dorsally *I. curvidactyla*
- Metasome segments 1–3 and urosomites 1–2 minutely serrate dorsally *I. serra*
9. Antenna 1 in males longer than antenna 2, with main flagellum longer

- than peduncle. Telson less than 1.5 times longer than broad
 *I. chilensis*
 – Antenna 1 in males half as long as antenna 2, with main flagellum
 shorter than peduncle; telson 2.5 times longer than broad . . . *I. nagatai*

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